Equipping nurses and care staff to manage mealtime difficulties in people with dementia: A systematic scoping review of training needs and interventions

Authors: James Faraday[1] (corresponding author)

Christos Salis[2]

Anne Barrett[3]

[1]Adult Speech and Language Therapy
The Newcastle upon Tyne Hospitals NHS Foundation Trust
Newcastle upon Tyne
NE1 4LP
UK
james.faraday@nuth.nhs.uk
+44 (0) 191 282 4324

[2]Speech and Language Sciences
Newcastle University
Newcastle upon Tyne
NE1 7RU
UK
christos.salis@ncl.ac.uk
+44 (0) 191 208 8875

[3]Speech and Hearing Sciences
University College Cork
Cork
Ireland
anne.barrett@umail.ucc.ie

+353 872109741

Abstract

Purpose: Mealtime difficulties are prevalent in dementia, posing major challenges to people with dementia (PWD), carers, and clinical services. Speech-Language Pathologists have a recognised role in providing training to carers of PWD who have mealtime difficulties. The aims of this study are: (1) to identify the training needs of nurses and care staff in regard to managing mealtime difficulties in PWD; (2) to describe existing training interventions on this topic; and (3) to investigate the extent to which these interventions are relevant to the needs of nurses and care staff.

Method: A systematic search was carried out to identify studies relevant to the aims of the review. Data were extracted, and then synthesised using thematic analysis and a synthesis matrix. Study quality was appraised using a validated appraisal tool.

Results: Various themes were identified in relation to the training needs of nurses and other care staff who manage mealtime difficulties in people with dementia. These were as follows: person-centered care; dealing with uncertainty; strategies, skills and knowledge; and creating the right environment. Existing training interventions were described and compared against the training needs. The review found some correspondence between interventions and staff needs, but also some gaps.

Conclusions: Training interventions on this topic should be more systematically developed and better reported to facilitate effective implementation. Evidence to date indicates that training should do more to help staff deal with uncertainty. Further research assessing the

benefits of Speech-Language Pathologists' involvement in the development of training interventions is recommended, because of this profession's specialist skills and knowledge in regards to both dysphagia and communication.

Introduction

The provision of training to carers of people with eating and drinking difficulties is a recognised role within the scope of practice of Speech-Language Pathologists (SLPs). This has been acknowledged by professional bodies across the world. The American Speech-Language-Hearing Association included in its dysphagia policy statement the SLP role: "provide education, counselling, and training to individual with a swallowing and/or feeding disorder, family, significant others, dysphagia team, health and education professionals" (ASHA, 2002). The Royal College of Speech and Language Therapists (RCSLT) stated that "the Speech & Language Therapist will instigate training for carers and care staff to whom the responsibility for supporting eating and drinking has been delegated (RCSLT, 2005, p.70).

Training should be tailored to the clinical population, where appropriate. For example, the eating and drinking difficulties experienced by people with dementia (PWD) are often different in certain respects compared with other populations (Altman et al., 2013). A person with dementia may present with food refusal, distractibility, visual agnosia, swallowing and feeding apraxia, pocketing food, spitting food, excessive swallows, rapid eating, absent chewing, and delayed or impaired pharyngeal swallow (Payne & Morley, 2018). In this paper, we will use the term "mealtime difficulties" to encompass any such difficulties, in preference to the term "dysphagia" which tends to refer more specifically to physiological or anatomical swallowing difficulty (Abdel Jalil et al., 2015).

Mealtime difficulties can have serious consequences for PWD. Inadequate oral intake may result in malnutrition and dehydration, reduced quality of life, more frequent hospital admissions, and increased risk of mortality (Abbott et al., 2013). Furthermore, unsafe swallowing may result in aspiration of food and drink, and increased risk of pneumonia (Torres et al., 2013). Dependency on carers for feeding has been shown to be the dominant risk factor for aspiration pneumonia (Langmore, 1988). In addition, eating and drinking are activities with significant social and emotional associations (Brush & Calkins, 2008). Consequently, difficulties with eating and drinking area can be particularly distressing for PWD, their families and carers.

The importance of training for carers of PWD is well-known to SLPs. Writing in the ASHA Leader, Brush, Slominski and Boczko (2006, p. 1) cited caregiver training as a means by which "speech-language pathologists can have a positive impact on the well-being and the nutritional status of clients with [dementia]". In its Resource Manual for Commissioning and Planning Services for SLCN: Dementia, the Royal College of Speech and Language Therapists (RCSLT, 2013, p. 2) advised that "[SLPs] have a key role in training others involved in the care of those with dementia in strategies associated to improve the effectiveness and safety of feeding and swallowing. In a submission to Clinical Guidelines for Dementia in Australia, Speech Pathology Australia argued that SLPs have the unique skills to distinguish normal ageing versus disease processes impacting communication and swallowing function as well as provide services to … support and educate both formal and informal carers [and] facilitate positive, supportive, and enabling communication and mealtime environments (Speech Pathology Australia, 2015). Similarly, the Irish Association

of Speech and Language Therapists (IASLT, 2016, p. 16) recommended the SLP's role includes to "advise, support and train carers to support safe swallowing [in PWD]".

In care settings such as nursing homes, care homes and hospitals, it is nurses and care staff who provide front-line care to PWD, including assistance at mealtimes (Aselage et al., 2011). This means that nurses and care staff working with PWD need to be appropriately trained to manage mealtime difficulties effectively. This would lead to improved staff competence and confidence (Pitfield et al., 2011), better health outcomes and quality of life for PWD, and greater reassurance for their families (Hanson et al., 2013).

In order to ensure that SLPs provide effective training to nurses and care staff on the topic of managing mealtime difficulties in PWD, it is important to identify the training needs of this workforce, and to consider how well-matched existing training interventions are to these needs. Recent systematic reviews have addressed mealtime difficulties in dementia. Aselage et al. (2011) grouped their findings into four themes: characteristics of feeding difficulties for people with dementia; measurement; factors influencing mealtime difficulties; and interventions to alleviate mealtime difficulties. Liu et al. (2015) considered any intervention on mealtime difficulties, including the use of nutritional supplements, training education programmes, and environment/routine modification. In two companion reviews, Abdelhamid et al. (2016) and Bunn et al. (2016) assessed the effectiveness of direct and indirect interventions respectively, which were aiming to improve, maintain or facilitate food/drink intake. To our knowledge, no previous systematic review has identified training needs *and* training interventions for nurses and care staff in regards to managing mealtime difficulties in dementia, or investigated the extent to which interventions are relevant to the training needs of staff.

Research questions

With this background in mind, the present systematic scoping review was carried out in order to provide information for SLPs who are engaged in training nurses and other care staff on the topic of managing mealtime difficulties in PWD. In particular, the review seeks to answer the following research questions: (1) what are the training needs of nurses and other care staff for managing mealtime difficulties in PWD?; (2) what are the reported training interventions for nurses and other care staff for managing mealtime difficulties in PWD?; and (3) to what extent are the reported training interventions relevant to the identified training needs of nurses and other care staff?

Method

A systematic scoping review was the chosen method for this study. A scoping review provides a preliminary assessment of the potential size and scope of available research literature and aims to identify the nature and extent of research evidence (Grant & Booth, 2009). Unlike traditional systematic reviews that tend to address relatively precise questions, such as a systematic review of the effectiveness of a particular intervention based on a precise set of outcomes, scoping reviews can be used to map the key concepts underpinning a research area (Joanna Briggs Institute, 2015). Scoping reviews may be particularly relevant to areas with emerging evidence, such as this, in which the paucity of randomized controlled trials makes it difficult for researchers to undertake traditional systematic reviews (Levac, Colquhoun, & O'Brian, 2010). At the same time, it is possible and in many ways desirable to undertake a scoping review in a systematic fashion, and to report it in compliance with

established reporting guidelines for traditional systematic reviews (Shemilt et al., 2013), which is the intention of this review.

Information sources and search

The authors, in consultation with an information specialist, a university librarian and a healthcare librarian, devised the search strategy. Six databases, relevant to the topic, were identified for the electronic search: Alois, BNI, CENTRAL, CINAHL, MEDLINE, and PsycINFO. These were selected to provide comprehensive coverage across a broad range of professional disciplines and database types. The review topic was divided into discrete concepts: nurses and care staff; disorder; intervention and outcome measures; activity (i.e., eating and drinking). Several search terms were identified for each concept, with truncation symbols used where necessary to capture different spellings. Index terms (e.g., MeSH terms) were identified, where permissible by the relevant database. Searches were run in each database, using inception of database to the end of January 2016 as the time-frame. An example search strategy for MEDLINE is shown in Appendix 1. Additionally, hand searches were performed using journals identified as relevant to the topic, from the fields of nursing, speech and language therapy, dementia, and dysphagia. Reference lists of existing systematic reviews in this topic area were also searched, including two recent reviews (Abdelhamid et al., 2016, Bunn et al., 2016). Lastly, references and citations of all papers selected for inclusion via the electronic and hand searches were screened for eligibility.

Eligibility criteria and study selection

A priori eligibility criteria were set to determine the papers relevant in answering the review's research questions. The inclusion and exclusion criteria are listed below.

Inclusion criteria:

1. Studies which involved nurses and/or other care staff who look after PWD in any setting and had the following characteristics:
    a. Dementia was of any type and any stage;
    b. Where studies included participants with multiple clinical diagnoses, the majority of participants had dementia.
2. Studies which investigated confidence, competence or knowledge of nurses or care staff in relation to managing mealtime difficulties in PWD, and/or which reported interventions intended to train/educate nurses or care staff to manage mealtime difficulties in PWD.
3. Studies which were peer-reviewed.
4. Studies which reported primary research.
5. Studies published in English.

Exclusion criteria:

1. Studies about training on topics other than the management of mealtime difficulties.
2. Studies about interventions other than training as a means of managing mealtime difficulties;
3. Studies which involved family caregivers.

The first author, using these eligibility criteria, screened the titles and abstracts of electronically retrieved papers. The second author, independently, also screened a sample of

these (28%) to gauge inter-rater reliability (cf., Murray, Salis, Martin, & Dralle, 2018). Papers that passed the title/abstract screen were then read in full independently by the first and second authors, to confirm whether or not they met the inclusion criteria. Reasons for exclusion were noted. Disagreements were resolved via discussion between the two authors.

Data extraction

A bespoke data extraction form was devised, piloted by the first and third authors on 10 eligible papers (five per author), and subsequently refined to capture all necessary information. The data extraction form is shown in Appendix 3. The first and third authors carried out data extraction in all papers independently, which were subsequently cross-checked independently. Discrepancies were resolved via discussion. If any information necessary to complete the data extraction form was not evident in a paper, the lead author of that paper was contacted by email to request that information. This process is in accordance with guidance from the Cochrane Collaboration, which recommends reviewers contact authors of eligible studies included in the review to request additional information on poorly reported items (Higgins & Deeks, 2011). Specific pieces of information were sought, in line with the data extraction form, for example, information about intervention development, background of trainers, and method of training delivery.

Quality appraisal of included studies

The Mixed Methods Appraisal Tool (MMAT) (Pluye et al., 2011) was used to assess the methodological quality of the studies. This tool has theoretical and content validity, and has been tested for efficiency and reliability (Pace et al., 2011). The MMAT was chosen because

it has been designed for appraisal of qualitative, quantitative and mixed methods studies. It allows appraisal of various items, including data collection and analysis, participant recruitment, and integration of quantitative and qualitative data. MMAT appraisal results in a score for each study in the range of 0% to 100% (Pace et al., 2012). For mixed methods research studies, the overall quality score is the lowest score of the study components. To ascertain inter-rater reliability in the present review, the MMAT was piloted for suitability by the first and third authors on six eligible papers (three per author). Guidance notes were written by the first author and discussed with the third author in order to ensure that criteria were interpreted consistently. Any disagreements were resolved via discussion between the authors.

Data synthesis

For data synthesis, studies were grouped into: (1) training needs studies (i.e., studies in which no training intervention took place, but which investigated staff's baseline confidence, competence or knowledge in relation to managing mealtime difficulties in PWD); and (2) training intervention studies (i.e., studies which reported a training intervention intended to train/educate staff to manage mealtime difficulties in PWD). Data from training needs studies were used to answer research question 1: What are the training needs of nurses and care staff, for managing mealtime difficulties in PWD? Data from training intervention studies were used to answer research question 2: What are the reported training interventions for nurses and care staff, for managing mealtime difficulties in PWD*?* The synthesis process is described next.

To answer question 1, thematic analysis was applied to the training needs studies, following the method described by Braun and Clarke (2006). Extracted data from discussion and conclusions sections of training needs studies were read several times, and relevant data features were coded. Codes were then collated into potential themes, which were then reviewed and refined until a coherent pattern was formed which accurately reflected the data set, thus generating a thematic map showing themes and sub-themes. Finalised themes were named and described. The first author undertook this process, and the second author checked that the results were consistent with the original data. Disagreements were resolved via discussion.

To answer research question 2, extracted data from training intervention studies were organised in a table according to the following training intervention components: Intervention development; Trainers; Trainees; Method of delivery; Content. Where information about these components was not clear or was absent from the papers, the lead author was contacted by email to try to ascertain this. Data were described narratively. In addition, intervention outcomes for each study were summarised.

To answer research question 3, findings from research question 1 were compared with findings from research question 2, to examine the extent to which the reported training interventions were relevant to the identified training needs, utilising a synthesis matrix (Kavanagh et al., 2012). Training needs were presented in a table, alongside reported training interventions content, which corresponded to those needs. The first and second authors independently made decisions about which content corresponded to which needs. Disagreements were resolved by discussion.

Results

Study selection

The initial database search retrieved 1,647 results. Reference management software was used to remove duplicates, resulting in 982 papers for screening (titles and abstracts). In the title and abstract screening, the inter-rater reliability between the first and second authors was 98%. This screening resulted in 76 papers from the database search for full-text screening. Following full text screening, 17 papers from the database search met the inclusion criteria. Additionally, hand searches identified 26 papers for full-text screening, of which 6 met the inclusion criteria. Thus, the total number of included papers was 23. Included papers were grouped into 11 training needs and 12 training intervention studies. Figure 1 provides a summary of the study selection process. Appendix 2 shows the articles which were excluded after full-text screening, with reasons for exclusion.

Training needs studies

Characteristics and quality

Eleven studies investigated staff's baseline confidence, competence or knowledge in regards to managing mealtime difficulties in PWD. We have termed these "training needs studies". Data relating to the characteristics and quality of these studies are shown in Table 1. In terms of methodology, six studies were qualitative, one was quantitative, and four were mixed-methods. Geographically, five studies were from Europe, three were from North America, two were from Australasia, and one was from Asia. Eight studies had a long-term care

setting, two had a hospital setting, and one included both of these settings. Six studies included both qualified nursing staff and non-qualified care staff as participants. Three studies (Beattie et al., 2014; Bergland et al., 2015; Lopez et al., 2010) included other staff groups in addition to nurses and care staff. For example, Beattie et al. (2014) recruited catering staff and activities staff, while Lopez et al. (2010) recruited social workers and senior administrators, amongst other professionals. In two studies (Kayser-Jones & Schell, 1997; Pasman et al., 2003), only nurses were represented, while in two other studies (Chang & Roberts, 2008; Pierson, 1999), only care staff were represented.

In terms of quality appraisal (MMAT scores), only one study scored 100% (Pierson, 1999), two studies scored 75% (Bergland et al., 2015; Pasman, 2003), five scored 50% (Akerlund & Norberg, 1985; Athlin et al., 1990; Beattie et al., 2014; Chang & Roberts, 2008; Lopez et al., 2010), and three scored 25% (De Bellis, 2003; Kayser-Jones & Schell, 1997; Michaelsson et al., 1987). The most common unmet criterion across studies was "Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?".

Thematic analysis

Thematic analysis was carried out on the 11 papers reporting training needs studies. The thematic analysis generated four major themes in regards to training needs: (1) person-centered care; (2) dealing with uncertainty; (3) strategies, skills and knowledge; and (4) creating the right environment. These themes are shown in Figure 2, which is a thematic map including main themes and sub-themes. The themes are described below, with key examples of supporting data from relevant studies.

Person-centered care. According to this theme, optimal care is achieved by considering the individual needs, preferences and problems of PWD. Bergland et al. (2015, p. 126) emphasised the "importance of meeting each resident in his/her situation and giving attention to their individual needs". Chang and Roberts (2008, p. 239) reported that "the culture of the long term care facility must change so that needs of residents (instead of tasks) become the focus of attention". Some studies highlighted the importance of communication and interaction between staff and PWD to ensure person-focused care. For example, De Bellis et al. (2003, p. 8) stated that "careful attention to communication will enhance understanding and facilitate the development of resident-focused interventions, this resulting in better care outcomes for all concerned". This approach reduces the likelihood of feeding by routine, which is described by Athlin (1990, p. 153) as follows: "the caregiver's attention is moved from the patient to the task, which then becomes more important than the patient".

Dealing with uncertainty. This theme refers to nursing and care staff being uncertain of the right approach when managing mealtime difficulties. Akerlund and Norberg (1985, p. 124) stated that "care workers were constantly exposed to messages and arguments from different angles. Theories, principles, rules and facts mingled and even contradicted each other". Michaelsson et al. (1987, p. 73) cited a "lack of true answers to the daily problems of nursing [PWD]", while Pierson et al. (2003, p. 304) argued that "definitively complete instructions for feeding … can never be written". *Food refusal* was one sub-theme here; for example, Akerlund and Norberg (1985, p. 216) posed the question "Does a severely demented patient who keeps his mouth closed really mean to refuse to eat, or is he just exhibiting agnosia and apraxia?" Another linked sub-theme was *Emotional challenge*, exemplified by Pasman et al.'s finding (2003, p. 309) that "nurses had difficulty accepting the inadequate food intake of

patients and felt responsible for it". Pasman et al. (2003) was the only study to suggest a tangible means of resolving or reducing uncertainty, namely, discussion with colleagues.

Strategies, skills and knowledge. To summarise this theme: nursing and care staff require strategies, skills and knowledge to manage mealtime difficulties and provide appropriate assistance – but are sometimes lacking these. Chang and Roberts (2008, p. 238) observed that "nursing assistants used limited strategies to deal with feeding difficulty, and many did not use strategies that were effective". Kayser-Jones and Schell (1997, p. 38) found that "carefully nuanced assistance, provided in a gentle non-threatening way that supported both the dignity and the independence of the resident was most effective". Lopez et al. (2010, p. 88) endorsed "staff who value and are capable of providing high-quality feeding assistance". Nutritional knowledge was also highlighted as important. Beattie et al. (2014, p. 163) suggested "…enhancing the nutritional awareness and assessment skills of existing staff through improvements in training and development might provide a cost-effective strategy for optimising nutritional status and subsequent quality of life for residents". Promoted in some studies was close collaboration with family members to ensure appropriate management; for example, Pasman et al. (2003, p. 309) discussed "the desirability of involving family in daily care".

Creating the right environment. This theme is about the importance of providing a positive, social and attractive environment at mealtimes. Bergland et al. (2015, p. 125) advocated "a positive community including all the persons around the table". For Kayser-Jones and Schell (1997, p. 38), "it was seen as important that nursing homes should strive to provide meals as attractively as possible, reflecting mealtime as it would be in one's own home". Lopez et al.

(2010, p. 87) found that "overall quality of care was higher in [nursing homes] which had a homelike environment".

Training intervention studies

Characteristics and quality

Twelve of the included papers reported a training intervention aiming to train/educate staff to manage mealtime difficulties in PWD. We have termed these "training intervention studies". Data relating to the characteristics and quality of these training intervention studies are shown in Table 2. Nine studies were quantitative in design; three were mixed-methods. All of the studies were carried out in long-term care settings. In regards to quality appraisal of the training studies, two studies scored 100% using the MMAT (Chen et al., 2016; Van Ort & Phillips, 1995), three studies scored 75% (Batchelor-Murphy et al., 2015; Chang & Lin, 2005; Faxen-Irving et al., 2002), six scored 50% (Altus et al., 2002; Christensson et al., 2003; Mamhidir et al., 2007; Perivolaris et al., 2006; Roberts & Durnbaugh, 2002; Suominen et al., 2007), and one scored 0% (Charras & Frémontier, 2010). The most common unmet criterion across the studies was "Are participants (organizations) recruited in a way that minimizes selection bias?".

Components of training interventions

Table 3 shows extracted data from the training intervention studies organised according to various training intervention components. These are described below.

Intervention development. We were able to extract data on how the training intervention was developed for eight studies. The interventions in three of these studies were developed in conjunction with stakeholders, for example, nursing assistants (Chang & Lin, 2005), expert nurses (Roberts & Durnbaugh, 2002), and nurses and care staff (Van Ort & Phillips, 1995). Interventions in five studies were informed by findings from previous research (Altus et al., 2002; Batchelor-Murphy et al., 2015; Charras & Frémontier, 2010; Roberts & Durnbaugh, 2002; Van Ort & Phillips, 1995). In two studies the training was informed by literature reviews (Perivolaris et al., 2006; Roberts & Durnbaugh, 2002). In one study it was developed from an earlier training programme (Batchelor-Murphy et al., 2015), and in two other studies there was an explicitly stated theoretical background (Altus et al., 2002; Mamhidir et al., 2007)

Trainers. For seven of the studies, the professional background of the trainers was either stated in the paper or obtained by contacting the authors. Three studies included trainers with a background in psychology (Altus et al., 2002; Charras & Frémontier, 2010; Mamhidir et al., 2007). Three studies included trainers with a background in nursing (Batchelor-Murphy, et al., 2015; Chang & Lin, 2005; Mamhidir et al., 2007). Two studies included trainers with a background in nutrition/dietetics (Faxen-Irving et al., 2002; Suominen et al., 2007). Two studies included trainers who were researchers with no stated clinical training (Batchelor-Murphy et al., 2015; Charras & Frémontier, 2010).

Trainees. In six studies, a combination of nurses and care staff received training (Christensson et al., 2003; Mamhidir et al., 2007; Perivolaris et al., 2006; Roberts & Durnbaugh, 2002; Suominen et al., 2007; Van Ort & Phillips, 1995). In two studies, additional staff groups were also trained; these were activity aids and recreation therapy

assistants (Perivolaris et al., 2006), and food service personnel (Suominen et al., 2007). Nursing assistants were the only group trained in two other studies (Altus et al., 2002; Chang & Lin, 2005). Qualified nurses were the sole recipients of training in one study (Chen et al., 2016). In the remaining studies, the trainees were not specified.

Method of delivery. Methods to deliver training included the internet (Batchelor-Murphy et al., 2015), lectures (Chen et al., 2016; Faxen-Irving et al., 2002; Mamhidir et al., 2007; Suominen et al., 2007), in-service coaching (Altus et al., 2002; Chang & Lin, 2005; Chen et al., 2016; Mamhidir et al., 2007), group work (Batchelor-Murphy et al., 2015; Charras & Frémontier, 2010; Christensson et al., 2003; Mamhidir et al., 2007; Suominen et al., 2007), written materials (Chang & Lin, 2005, Chen et al., 2016; Christensson et al., 2003), and video footage (Batchelor-Murphy et al., 2015; Mamhidir et al., 2007; Roberts & Durnbaugh, 2002).

Content. Several interventions included content about feeding techniques and strategies (Altus et al., 2002; Batchelor-Murphy et al., 2015; Chang & Lin, 2005; Chen et al., 2016; Roberts & Durnbaugh, 2002). Some interventions considered the mealtime environment (Batchelor-Murphy et al., 2015; Chang & Lin, 2005; Charras & Frémontier, 2010; Chen et al., 2016; Mamhidir et al., 2007; Perivolaris et al., 2006; Van Ort & Phillips, 1995). Other studies focused on nutritional knowledge and awareness (Christensson et al., 2003; Faxen-Irving et al., 2002; Suominen et al., 2007). Several studies emphasised personal interaction, communication, and treating PWD as individuals (Batchelor-Murphy et al., 2015; Christensson et al., 2003; Mamhidir et al., 2007; Perivolaris et al., 2006).

Outcome measures and effectiveness

The full range and types of outcome measures and the effectiveness of the intervention studies, are shown in Table 4. The most frequent type of outcome measure used was the nutritional status of PWD, before and after training interventions, which was evident in 10 of the 12 studies (Batchelor-Murphy et al., 2015; Charras & Frémontier, 2010; Chang & Lin, 2005; Chen et al., 2016; Faxen-Irving et al., 2002; Mamhidir et al., 2007; Perivolaris et al., 2006; Roberts & Durnbaugh, 2002; Suominen et al., 2007; Van Ort & Phillips, 1995). In these studies, diverse aspects of nutritional measures were used, e.g. body mass, food and energy intake, as well as other biological markers such as skinfold thickness. Some studies reported improvements in nutritional measures (e.g., Charras & Frémontier, 2010; Chen et al., 2016), while others did not (e.g., Chang & Lin, 2005). Care staff satisfaction and attitudes were evaluated in six studies (Altus et al., 2002; Batchelor-Murphy et al., 2015; Charras & Frémontier, 2010; Chang & Lin, 2005; Christensson et al., 2003; Perivolaris et al., 2006). Formal (e.g., Chang & Lin, 2005) and informal questionnaires (Altus et al., 2002) were the most popular types of measures. In terms of satisfaction, mixed findings in terms of effectiveness were reported even when relevant data were analyzed with inferential statistics (e.g., Chang & Lin, 2005; Christensson et al., 2003) as opposed to descriptive analyses (e.g., Altus, 2002). Participation levels of PWD at mealtimes, including self-feeding, were reported in six studies (Altus et al., 2002; Batchelor-Murphy et al., 2015; Chan & Lin, 2005; Chen et al., 2016; Charras & Frémontier, 2010; Perivolaris et al., 2006). Outcomes in terms of relevant aspects of knowledge-levels of care staff after training were evaluated in four studies (Batchelor-Murphy et al., 2015; Chang & Lin, 2005; Roberts & Durnbaugh, 2002; Suominen et al., 2007). Statistically significant improvements in care staff knowledge were reported by Batchelor-Murphy et al. (2015), Chang and Lin (2005), Roberts and Durnbaugh (2002). Three studies reported outcomes regarding inter-personal communication between care staff and PWD (Altus et al., 2002; Perivolaris et al., 2006; Van Ort & Phillips, 1995). These results

were mainly qualitative in nature. Finally, cognitive measures of PWD that were reported in two studies (Chen et al., 2016; Faxen-Irving et al., 2002) did not change.

Comparison of training needs and interventions

Table 5 shows a synthesis matrix, with themes from the training needs studies presented alongside training interventions which reported content relevant to those themes.

Four training interventions included content relevant to *person-centered care*. Among the principles adhered to in the intervention by Batchelor-Murphy et al. (2015, p. 213) was "change the person [with dementia]"; it is acknowledged by Batchelor-Murphy and colleagues that they based their intervention partly on Amella (2014), who emphasized the importance of considering individual preferences and behaviors. Christensson et al. (2003, p. 226) advised on "how to identify individual needs, resources and problems in order to fulfil nutritional requirements". Mamhidir et al. (2007, p. 990) trained caregivers to help the PWD "feel like a person with his own identity". The intervention in Perivolaris et al. (2006, p. 265) used the principle that "education regarding an enablement and person-centered approach to care can enhance the dining experience for persons with dementia".

Dealing with uncertainty was not directly referred to in any of the training interventions. Indirectly, *food-refusal*, which was a sub-theme (see Figure 2), was alluded to by Chang and Lin (2005, p. 1187) who included in their training "feeding skills to deal with food refusal".

Strategies, skills and knowledge featured in eight training interventions. The training in Altus et al. (2002, p. 50) included "graduated prompts, moving from least to most intrusive", and the offering of "frequent praise to the residents for appropriate behaviors". Batchelor-Murphy et al. (2015, p. 213) provided training on "appropriate use of evidence-based nursing interventions" and included content on "hand feeding techniques". Chang and Lin (2005, p. 1187) included a "protocol for feeding dementia patients regarding how to manage feeding problems". Chen (2016, p. 3) gave guidance on providing "appropriate assistance". In Christensson et al. (2003, p. 226) staff "received education about using the Mini Nutritional Assessment form (MNA), calculating energy requirements, identifying individual needs and underlying causes of nutritional problems, drugs interfering with appetite and eating and how to structure nutritional documentation". Faxen-Irving et al. (2002, p. 222) addressed "malnutrition in the elderly, food and nutritional requirements, dental care, how to detect swallowing difficulties and how to change the consistency of food". The training used by Roberts and Durnbaugh (2002, p. 322) included "correct mealtime interventions". Suominen et al. (2007, p. 1187) included content intended to improve "understanding of aged nursing home residents' nutritional problems".

Creating the right environment was addressed in seven training interventions. In the training provided by Batchelor-Murphy et al. (2015, p. 213), "change the place (environment)" was a key principle, derived from Amella (2014). Chang and Lin (2005, p. 1187) included in their training protocol "preparation for the mealtime environment". Charras and Frémontier (2010, p. 440) based their training on the work of Berg, which emphasised environmental considerations such as ensuring "everyone is sitting comfortably; the dining room should be quiet and orderly … the food looks inviting and tasty". Mamhidir et al. (2007) instructed caregivers to create an environment that is "calmer, homelike and easier for the patients to

interpret". The training programme in Perivolaris et al. (2006, p. 260) "sought to create a pleasant physical environment in which the residents would eat their meals". Chen et al. (2015, p. 3) sought to ensure that "patients ate meals together as much as possible, and the dining environment was kept warm, with comfortable humidity and good ventilation". Van Ort and Phillips (1995, p. 9) designed an intervention to create "a feeding context or environment that promoted function by being as 'near normal' as possible".

Discussion

The purpose of this systematic review was to identify training needs of nurses and care staff in regards to managing mealtime difficulties for PWD, to describe the existing training interventions on this topic, and to investigate the extent to which the interventions are relevant to the needs. The number of included studies was relatively small (n=23), particularly in the context of increasing numbers of PWD in care settings (Alzheimer's Society, 2015). This review has generated new information which has implications for SLPs' clinical practice and provides directions for future research. In particular, the review found some correspondence between needs and interventions, but there were also gaps which we discuss below.

Before moving on to a discussion of the review's findings in relation to training needs and interventions, it is significant to note from the outset that only one included paper (Lopez et al., 2010) reports SLP involvement in its study. This is a problematic absence since, as has already been stated, SLPs have a clear remit to provide training to carers of PWD with eating and drinking difficulties. SLPs bring a unique perspective and specialist knowledge in

relation to eating and drinking difficulties. They have expertise in dysphagia assessment and management, including topics such as signs and symptoms of swallowing difficulty, and optimal positioning at mealtimes. This is relevant to the strategies, skills and knowledge needed by nursing and care staff to manage mealtime difficulties in PWD. SLP input in the development of future training interventions is important to help ensure that adequate consideration is given to swallowing safety. In addition, the review has identified that good communication is a common element of mealtime care for PWD (De Bellis, 2003; Chang & Roberts, 2008). SLPs, as specialist communication professionals, have the potential to make important contributions in equipping nurses and care staff with relevant communication skills. Furthermore, SLPs have relevant skills in workforce training and education. In its policy statement on knowledge and skills needed by SLPs, ASHA (2002) lists the following skills: "Identify educational and training needs; provide educational and training programs; instruct non-speech-language pathology staff and other caregivers in treatment techniques, problem solving, and monitoring of the status of the individual with a swallowing and/or feeding disorder". Thus, the SLP profession has an important contribution to make in equipping nurses and care staff in managing mealtime difficulties in PWD, perhaps most usefully through collaboration with other relevant disciplines, such as nursing, nutrition/dietetics, occupational therapy, and psychology.

Training needs of nurses and care staff

Notwithstanding the lack of SLP involvement in included studies, the review identified a number of key themes in the training needs studies. These themes improve our understanding of the training needs of nurses and care staff in regards to managing mealtime difficulties in PWD, and provide a useful basis to inform SLP training interventions on this topic. The

identified themes are to some extent consistent with the wider literature in both dementia care, and speech-language pathology. The first theme is *Person-centered care*. This approach is considered important in dementia care (Fazio et al., 2018), and in other aspects of health and social care more generally (McCormack et al., 2011), including speech-language pathology (RCSLT, 2014, p. 2). The second theme is *Dealing with uncertainty*. This is an issue found elsewhere in the dementia literature. For example, Goodman, Froggatt, Amador, Mathie, and Mayrhofer (2015) argued that uncertainty is an inevitable and integral part of end-of-life dementia care, and proposed that interventions need to manage this inherent uncertainty. Dealing with uncertainty, particularly in relation to the ethical issues that can arise in dysphagia cases, is also seen in the work of SLPs more widely (Flather-Morgan, 1994; Leslie & Crawford, 2017; Sharp, 2006). The third theme is *Strategies, skills and knowledge*. The importance of a skilled and knowledgeable care workforce is emphasised in the Dementia Care Practice Recommendations (Alzheimer's Association, 2017). It is also prevalent in the SLP literature (Heritage, 2001; Ilott et al., 2013; Van der Meer et al., 2017) .The fourth theme is *Creating the right environment*. This echoes guidance from the National Collaborating Centre for Mental Health (2007) in the United Kingdom, which advocates caring environments for PWD that are more home-like in character, and is also frequently found in SLP literature (Bruce et al., 2013; Brush et al., 2011).

The quality of the training needs studies was not high – the median MMAT score was 50%. Findings should be interpreted with this in mind. The most common shortcoming in the included studies was that the relationship between findings and researchers' influence was not appropriately considered. However, Pasman et al. (2003) gave due consideration to the authors' personal experiences during the study. Pierson (1999) used ethnomethodology to take into account researcher bias when analysing and interpreting the data.

Training interventions

There was a variety of delivery methods used in the training interventions, (e.g., lectures, in-service coaching). Only one study reported use of the internet to deliver training. Interestingly, a recent systematic review of undergraduate nursing education found that online learning for teaching clinical skills is no less effective than traditional means (McCutcheon et al., 2015). Whatever delivery methods are chosen, intervention design should take account of what is feasible, acceptable to stakeholders, and likely to be implemented effectively (Medical Research Council, 2006). There may also be a role for behavior change theories to optimise effectiveness of delivery (Michie et al., 2014). This would enable a clearer understanding of how to create change in the behavior of nurses and care staff, for example, by thinking about their capabilities, opportunities and motivators. Of note, behavior change theory is an approach which is increasingly used in other speech-language pathology interventions (Govender et al., 2017; Johnson et al., 2016).

As was the case with the training needs studies, methodological quality of the training intervention studies was not high. The median MMAT score was 50%. Most frequently, studies were penalised because participant recruitment did not sufficiently minimise selection bias. Two studies addressed this adequately: in Van Ort and Phillips (1995) the intervention and non-intervention groups were recruited from the same population. In Chen et al. (2016), steps were taken to ensure the sample was representative.

Information about intervention development was often absent or poorly reported in the intervention studies. This is a significant shortcoming because it does not enable other

researchers to replicate published interventions in a research context, or scrutinise the mechanisms of behavior change in an intervention. Guidance from the Medical Research Council (2006) states that best practice is to develop complex interventions systematically, using the best available evidence, appropriate theory, and pilot studies. The training interventions under consideration are "complex" because they contain several interacting components (e.g., trainers, trainees, content, method of delivery). As such, they warrant systematic development. Some intervention studies adhered to this, for example, Roberts and Durnbaugh (2002) based their intervention on a pilot study, a literature review, and input from expert nurses. However, a systematic approach was lacking in other studies, or, if it had taken place, it was not reported. In particular, there was limited consideration of educational theory, or stakeholder involvement.

The overall picture of the effectiveness of the interventions is mixed, both in terms of positive outcomes as well as range outcome measures. The majority of studies examined biological measures of nutritional status, highlighting the importance of nutrition in maintaining health. Not all studies found positive changes in nutritional status; for example, Chang and Lin (2005) did not. Similarly, several studies that evaluated care staff's levels of satisfaction and attitudes as a result of training also yielded mixed results – examples are Chang and Lin (2005), and Christensson et al. (2003). By contrast, levels of knowledge were reported consistently higher post-training. At present, little is known about the extent to which inter-personal communication between care staff and PWD can have a positive impact on mitigating communication challenges during mealtimes. Similarly, it is unclear if training to reduce mealtime difficulties in PWD can have positive effects on cognitive functioning. In addition, the well-being of PWD at mealtimes as a result of staff training has received scant attention.

In terms of evaluating the quality of the training studies (MMAT ratings in Table 2) and the breadth of outcome measures utilised (Table 4), only two studies received MMAT scores of 100% (Chen et al., 2016, Van Ort & Phillips, 1995). However, Chen et al. (2016) utilised only two types of measures to evaluate effectiveness (four nutritional measures, one cognitive measure). Van Ort and Phillips (1995) also utilised two types of measures (one nutritional, one inter-personal communication). Ideally, researchers should not only attempt to design studies of high quality in terms of methodological rigor, but also include a broad range of methodologically-sound outcome measures that can capture sensitively the effects of training across stakeholders (e.g., PWD and their families, care staff) and across domains (e.g., nutritional status, communication between staff and PWD, staff knowledge and satisfaction).

Relevance of training interventions to training needs

The reported content of training interventions was relevant to the identified training needs to some extent, but not entirely. Several interventions used principles of person-centered care (Batchelor-Murphy et al., 2015; Christensson et al., 2003; Mamhidir et al., 2007; Perivolaris et al., 2006). Other interventions aimed to provide staff with necessary strategies, skills and knowledge to manage mealtime difficulties in PWD (Altus et al., 2002, Batchelor-Murphy *et* al., 2015; Chang & Lin, 2005; Chen, 2016; Faxen-Irving et al., 2002; Roberts & Durnbaugh, 2002; Christensson et al., 2003; Suominen et al., 2007). Other interventions acknowledged the importance of creating the right environment and provided advice on how to do this (Batchelor-Murphy et al., 2015; Chang and Lin, 2005; Charras & Frémontier, 2010; Chen et al., 2016; Mamhidir et al., 2007; Perivolaris et al., 2006; Van Ort & Phillips, 1995). Importantly, none of the training interventions directly tackled uncertainty among staff.

We acknowledge that any training intervention, if effective, may indirectly help to mitigate uncertainty among its target staff group. For instance, training which equips staff with skills and knowledge may build confidence, and in turn reduce uncertainty. An example is the content on managing food-refusal in Chang and Lin (2005). Nevertheless, there is a clear requirement for future training interventions to address staff uncertainty in a more intentional way. This issue has been considered in the medical education literature. For example, Han et al. (2015) measured tolerance of uncertainty among medical students. Taylor et al. (2018) developed a training program to address tolerance of uncertainty among family medicine residents. Luther and Crandall (2011) discussed the role that ambiguity and uncertainty play in medicine, and argued that openly addressing these topics in the formal medical education curriculum is critical. As yet, however, the topic has not been comprehensively explored in other areas of health and social care. In regards to training staff to manage mealtime difficulties in PWD, an increased awareness and honest appraisal of the characteristics of advanced dementia could be important to include in interventions. This may help to reassure staff for whom food refusal is difficult to accept, and is potentially a source of guilt (Pasman et al., 2003). In addition, a culture that encourages open discussion between colleagues is likely to help. This is alluded to in Pasman et al. (2003), who suggested discussion among staff about differing approaches to care, and advocated a safe culture for expressing opinions and feelings. It is possible that this approach would enable staff to cope better with uncertainty. However, dealing with uncertainty did not form an explicit part of any of the intervention studies.

Limitations

Before our conclusions, we acknowledge the limitations of our study. This review excluded studies which were not peer-reviewed. The rationale for this was to try to ensure that studies were of at least reasonable methodological quality. The review also excluded studies which were not published in English, for reasons of practicality. A limitation of both of these decisions is that useful data may have been excluded, e.g., from non-peer reviewed grey literature and from studies published in languages other than English. For example, the heterogeneity of study designs meant that no meta-analysis of effectiveness of interventions could be attempted in this review. Finally, an appraisal of the quality of the outcome measures used in the intervention studies was beyond the scope of this study.

Conclusions

This review has provided information for SLPs who are engaged in training nurses and other care staff on the topic of managing mealtime difficulties in PWD. Several training needs have been identified. Training should emphasize: the importance of person-centered care; it should provide applicable and evidenced-based strategies, skills and knowledge; it should ensure that the right environment is in place for effective mealtimes; and it should address uncertainty among staff. Existing training interventions are relevant to some of these needs, in particular: person-centered care; strategies, skills and knowledge; creating the right environment. However, they have little to offer by way of directly addressing uncertainty among staff. Future training interventions should incorporate and evaluate this important aspect. This review has also shown that more and higher quality research is needed on the topic of mealtime difficulties in PWD. In particular, future interventions should be more systematically developed and more explicitly reported to facilitate effective implementation. Finally, it is notable that there is a lack of SLP input in the studies included in this review.

Further research assessing the benefits of SLP involvement in the development of training interventions is recommended, because of this profession's specialist skills and knowledge in regards to both dysphagia and communication.

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Figure 1. Study selection process

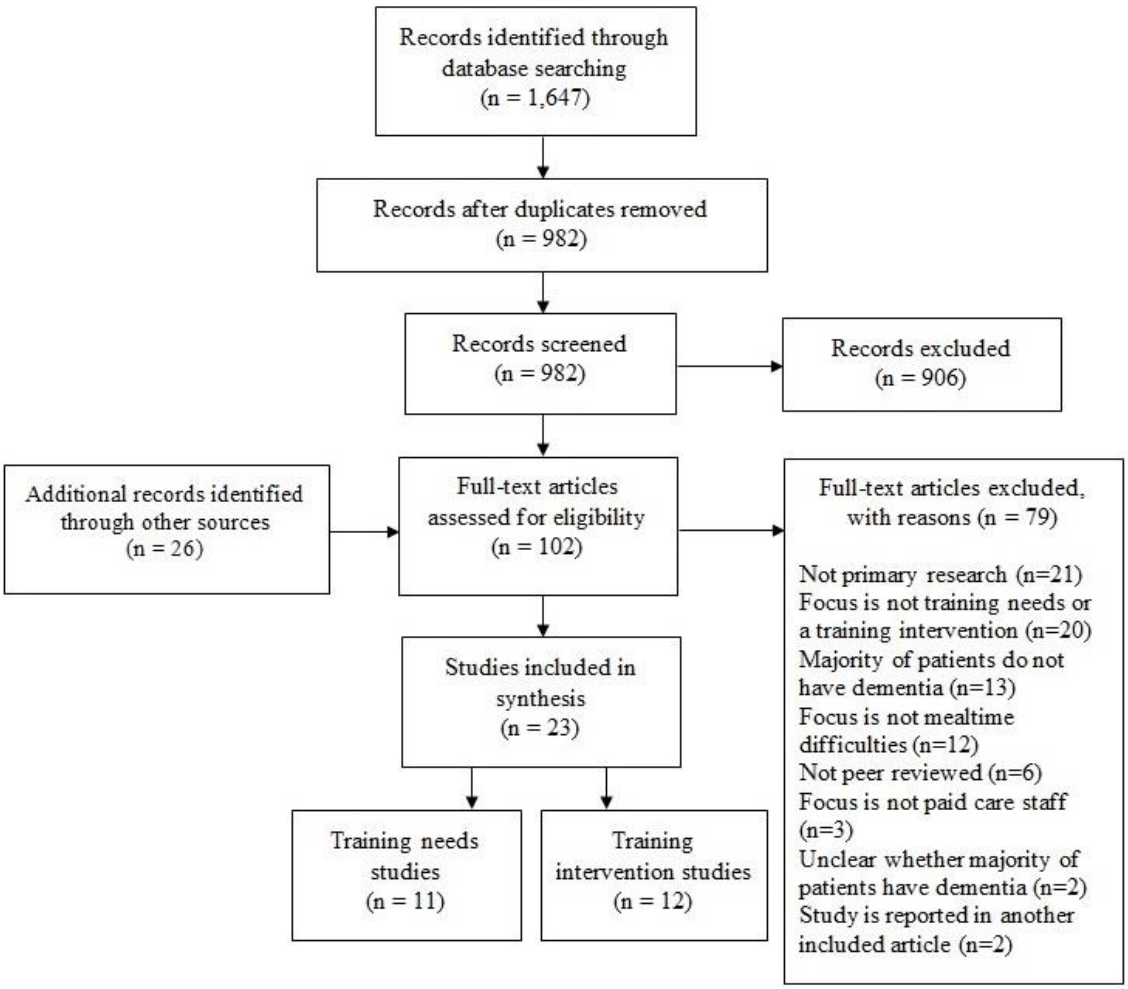

Figure 2. Thematic map, showing themes and sub-themes from training needs studies

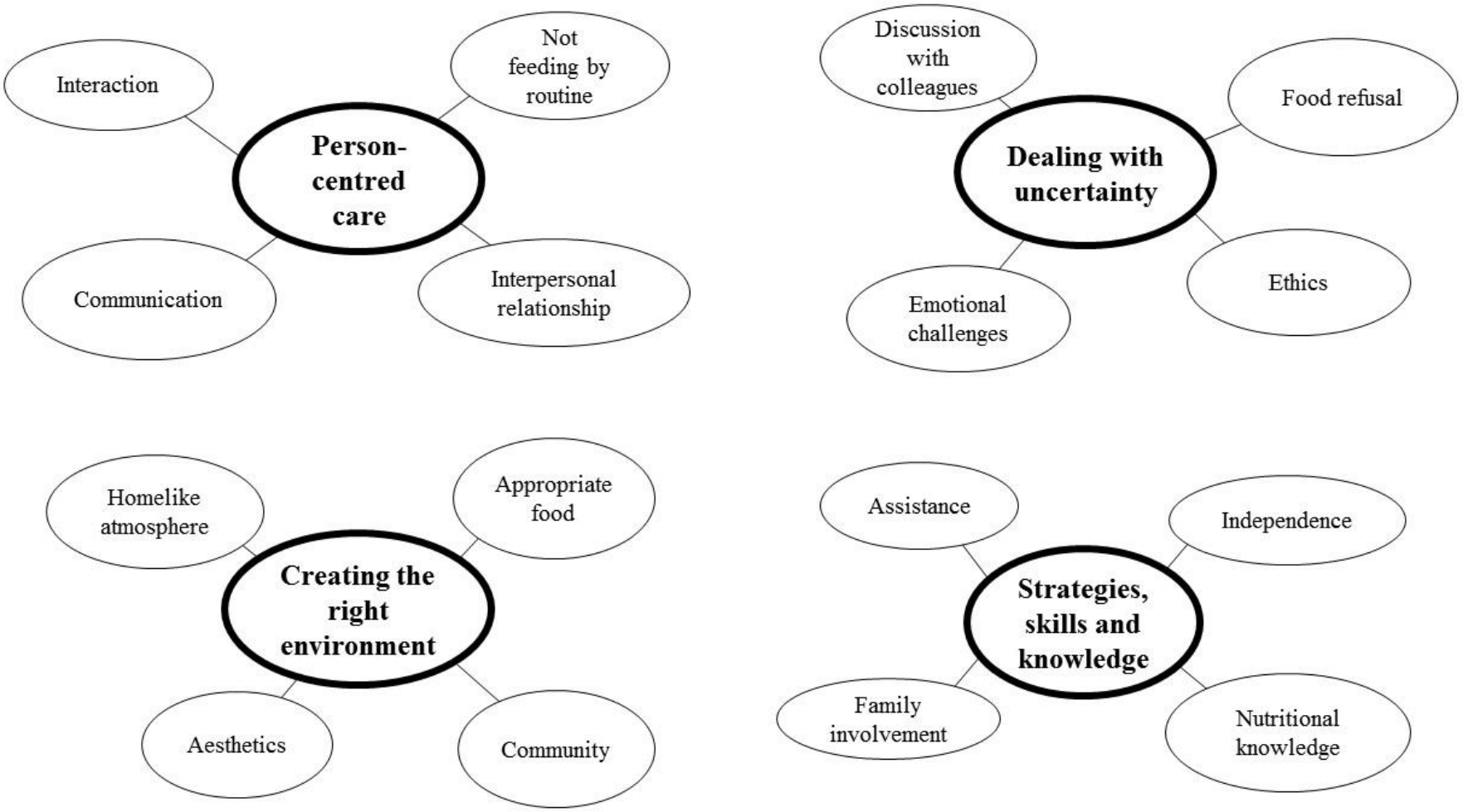

Table 1. Training needs studies - characteristics and quality

Study	Study design	Setting, Country	Participants (number enrolled in study)	Mixed Methods Appraisal Tool	
				Score	Unmet criteria
Akerlund and Norberg (1985)	Qualitative	Hospital (n=1), Sweden	Care workers, registered nurses, mental health nurses, practical nurses, and nurses' aides (total participants, n=40)	50%	Relation of findings to context; relation of findings to researchers' influence
Athlin et al. (1990)	Qualitative	Hospitals (n=3), Sweden	Registered nurses (n=3), enrolled nurses (n=27), nurses aids (n=24), carers (n=6)	50%	Relation of findings to context; relation of findings to researchers' influence
Beattie et al. (2014)	Quantitative	Residential home (n=1), Australia	Nursing staff (n=30), personal care staff (n=6), catering staff (n=3), and activities staff (n=9), others (n=2)	50%	Sample representing population under study; response rate
Bergland et al. (2015)	Qualitative	Nursing home (n=1), Norway	Registered nurses (n=3), state enrolled nurses (n=8), nursing assistants (n=4), nursing students (n=8), others (n=1)	75%	Relation of findings to researchers' influence
Chang and Roberts (2008)	Mixed-methods	Nursing home (n=1), Taiwan	Nursing assistants (n=31)	50%	Relation of findings to researchers' influence; integration of qualitative and quantitative data; consideration of limitations of integration
De Bellis et al. (2003)	Mixed-methods	Residential care facility (n=1), Australia	Care assistants, nursing staff (n=not stated)	25%	Data analysis; relation of findings to context; relation of findings to researchers' influence
Kayser-Jones and Schell (1997)	Qualitative	Nursing homes (n=2), USA	Nursing staff (n=not stated)	25%	Data analysis; relation of findings to context; relation of findings to researchers' influence

Lopez et al. (2010)	Mixed-methods	Nursing homes (n=2), USA	Directors of nursing (n=2), senior administrators (n=2), speech and language pathologists (n=2), registered nurses (n=4), licensed practical nurses (n=6), certified nursing assistants (n=6), social workers (n=2), diet technicians (n=2), recreation therapists (n=2), physicians (n=1), nurse practitioners (n=1)	50%	Sampling strategy; sample representing population under study
Michaelsson et al. (1987)	Mixed-methods	Hospitals and nursing homes (n=not stated), Sweden	Ward sisters (n=30), practical nurses (n=30)	25%	Data analysis; relation of findings to context; relation of findings to researchers' influence; integration of qualitative and quantitative data; consideration of limitations of integration
Pasman et al. (2003)	Qualitative	Nursing homes (n=2), The Netherlands	Nurses (n=not stated)	75%	Sources of qualitative data
Pierson (1999)	Qualitative	Long-term care facility (n=1), USA	Nursing assistants (n=not stated)	100%	Not applicable

Table 2. Training intervention studies – characteristics and quality

Study	Study design	Setting, Country	Participants (number enrolled in study)	MMAT	
				Score	Unmet criteria
Altus et al. (2002)	Quantitative	Dementia care unit in assisted living facility (n=1), USA	Certified nursing assistants (n=1)	50%	Recruitment minimises selection bias; appropriate measures
Batchelor-Murphy et al. (2015)	Quantitative	Nursing homes (n=2), USA	Certified nursing assistants (n=32), licensed practical nurses (n=9), registered nurses (n=3), others (n=1)	75%	Complete outcome data
Chang and Lin (2005)	Quantitative	Long-term care facilities (n=2), Taiwan	Nursing assistants (n=67)	75%	Complete outcome data
Charras and Frémontier (2010)	Mixed-methods	Special care units in nursing homes (n=2), France.	Nursing home staff (n = not stated)	0%	None of the criteria were met
Chen et al. (2016)	Quantitative	Nursing home (n=1), China	Registered nurses (n=not stated)	100%	Not applicable
Christensson et al. (2003)	Quantitative	Residential homes (n=8), Sweden	Registered Nurses (n=4); Nurse Aids (n=82)	50%	Recruitment minimises selection bias; comparable participants (or differences accounted for)
Faxen-Irving et al. (2002)	Quantitative	Group-living units for PWD (n=2), Sweden	Group-living unit staff (n=25)	75%	Recruitment minimises selection bias
Mamhidir et al. (2007)	Mixed-methods	Nursing homes (n=2), Sweden	Registered Nurses (n=2); Nursing assistants (n=6); Enrolled Nurses (n=2)	50%	Relation of findings to context; relation of findings to researchers' influence; recruitment minimises selection bias; complete outcome data
Perivolaris et al. (2006)	Quantitative	Long-term care facility (n=1), Canada	Registered Nurses (n=2); Registered Practical Nurses(n=3); Activity Aids	50%	Recruitment minimises selection bias; complete outcome data

			(n=1); Recreation Therapy Assistants (n=1)		
Roberts and Durnbaugh (2002)	Quantitative	Long-term care facilities (n=2), USA	Nurses (n=13), certified nursing assistants (22), nursing assistants (n=17)	50%	Recruitment minimises selection bias; appropriate measures
Suominen et al. (2007)	Mixed-methods	Nursing homes (n=5), Finland	Nurses (n=23), food service personnel (n=5)	50%	Data analysis; relation of findings to researchers' influence; recruitment minimises selection bias; integration of qualitative and quantitative data; consideration of limitations of integration
Van Ort and Phillips (1995)	Quantitative	Residential home (n=1), USA	Registered nurses, licensed practical nurses, and nursing assistants (total participants, n=18)	100%	Not applicable

Table 2. Training intervention studies – characteristics and quality

Study	Study design	Setting, Country	Participants (number enrolled in study)	MMAT	
				Score	Unmet criteria
Altus et al. (2002)	Quantitative	Dementia care unit in assisted living facility (n=1), USA	Certified nursing assistants (n=1)	50%	Recruitment minimises selection bias; appropriate measures
Batchelor-Murphy et al. (2015)	Quantitative	Nursing homes (n=2), USA	Certified nursing assistants (n=32), licensed practical nurses (n=9), registered nurses (n=3), others (n=1)	75%	Complete outcome data
Chang and Lin (2005)	Quantitative	Long-term care facilities (n=2), Taiwan	Nursing assistants (n=67)	75%	Complete outcome data
Charras and Frémontier (2010)	Mixed-methods	Special care units in nursing homes (n=2), France.	Nursing home staff (n = not stated)	0%	None of the criteria were met
Chen et al. (2016)	Quantitative	Nursing home (n=1), China	Registered nurses (n=not stated)	100%	Not applicable
Christensson et al. (2003)	Quantitative	Residential homes (n=8), Sweden	Registered Nurses (n=4); Nurse Aids (n=82)	50%	Recruitment minimises selection bias; comparable participants (or differences accounted for)
Faxen-Irving et al. (2002)	Quantitative	Group-living units for PWD (n=2), Sweden	Group-living unit staff (n=25)	75%	Recruitment minimises selection bias
Mamhidir et al. (2007)	Mixed-methods	Nursing homes (n=2), Sweden	Registered Nurses (n=2); Nursing assistants (n=6); Enrolled Nurses (n=2)	50%	Relation of findings to context; relation of findings to researchers' influence; recruitment minimises selection bias; complete outcome data
Perivolaris et al. (2006)	Quantitative	Long-term care facility (n=1), Canada	Registered Nurses (n=2); Registered Practical Nurses(n=3); Activity Aids	50%	Recruitment minimises selection bias; complete outcome data

			(n=1); Recreation Therapy Assistants (n=1)		
Roberts and Durnbaugh (2002)	Quantitative	Long-term care facilities (n=2), USA	Nurses (n=13), certified nursing assistants (22), nursing assistants (n=17)	50%	Recruitment minimises selection bias; appropriate measures
Suominen et al. (2007)	Mixed-methods	Nursing homes (n=5), Finland	Nurses (n=23), food service personnel (n=5)	50%	Data analysis; relation of findings to researchers' influence; recruitment minimises selection bias; integration of qualitative and quantitative data; consideration of limitations of integration
Van Ort and Phillips (1995)	Quantitative	Residential home (n=1), USA	Registered nurses, licensed practical nurses, and nursing assistants (total participants, n=18)	100%	Not applicable

Table 4. Summary of intervention outcomes

Study	Summary of outcomes
Altus et al. (2002)	1. *Participation in mealtime tasks*. Increased from baseline mean of 10% (A – prepared plates) to 24% (B – family-style meals), then decreased to 6% (A – prepared plates) and increased again to 65% (B – family-style meals and CNA training). 2. *Communication.* Appropriate communication increased from baseline mean of 5.5% (A) to 10.6% (B), then decreased to 3.8% (A) and increased again to 17.9% (B). 3. *Praise statements from nursing assistants.* Increased from baseline mean of 0.2 times per meal (A) to 7.2 times per meal (B), then decreased to 0, and increased again to 14.2 times per meal (B'). *4. Nursing assistants' satisfaction with mealtimes.* Increased from 4 – somewhat satisfied (start of study) to 5 – very satisfied (end of study).
Batchelor-Murphy et al. (2015)	1. *Staff Knowledge of Feeding Assistance.* Increased in intervention group from mean score of 77.1 to 95.6 immediately after training; score remained at 91.8 after 8 weeks ($p < 0.001$); control group scores remained stable after 8 weeks ($p = 0.36$). 2. *Staff Self-efficacy of Feeding Assistance.* Scores at baseline and 8 weeks post-training were compared, showing an improvement in self-efficacy scores for staff exposed to the training. The intervention group increased from 36.8 to 43.1 at 8 weeks ($p = 0.02$); control group scores remained stable ($p = 0.863$). 3. *The Food Intake Record/Edinburgh Feeding Evaluation in Dementia (EdFED).* Scores for both groups increased from baseline to Week 8. In the intervention group, the average score increased from 7.0 to 8.7; in the control group, the average score increased from 4.8 to 6.5. 4. *Feeding assistance.* In the training group, feeding assistance increased from a mean of 27 mins at baseline to 35 mins at Week 8 – more food was consumed. The control group decreased from a mean of 24 mins at baseline to 14 mins at Week 8 – less food was consumed. The average meal intakes for the intervention group more than doubled; meal intakes for the control group decreased by more than half.

	5. *Feeding Skills Checklist.* The mean feeding skill behaviours scores improved in both groups: intervention group increased from 17.3 to 22, control group increased from 15.8 to 20.8.
Charras and Frémontier (2010)	1. *Weight.* In the experimental group, average weight gain of 3.37 kg; in the control group, average weight loss of 2.22 kg. 2. *Qualitative analyses of staff observations and focus group (only evaluated post-training).* Increased autonomy of PWD behaviour at mealtimes; more interactions between PWD with other PWD and staff with PWD; PWD were more focused; less burn out for staff; greater insight of staff about PWD eating behaviours; limitations were also reported (e.g., time consuming to organise shared meals; increased duration of meals overlapped with other activities).
Chang and Lin (2005)	1. *Formal Caregivers' Knowledge of Feeding Dementia Patient Questionnaire*. Post-training, nursing assistants in the treatment group had higher knowledge scores than the control group ($p < 0.001$), controlling for nursing assistants' working experience. 2. *Formal Caregivers' Attitude toward Feeding Dementia Patient Questionnaire*. Significant difference between the two staff groups ($p = 0.001$), controlling for staff's experience. The treatment group had a more positive attitude toward feeding PWD than those in control group. 3. *Formal Caregivers' Behaviours toward Feeding Dementia Patients Observation Checklist*. Staff in the treatment group had significantly better behaviour scores than those in the control group ($p < 0.001$). 4. *EdFED scale.* Dementia patients in the treatment group had higher EdFED scores (i.e., more feeding difficulty) than those in the control group ($p < 0.05$). 5. *Food intake.* No significant difference on food intake between the two groups post-training ($p = 0.49$). 6. *Total eating time.* Dementia patients in the treatment group had a significantly longer eating time than the control group ($p < 0.05$).
Chen et al. (2016)	1. *Kubota water swallow test.* 63.4% of PWD scored in the abnormal range (grade III to V) pre-training; this decreased to 23.3% post-training ($p < 0.001$).

	2.	*Nutritional status (triceps skinfold thickness, upper arm circumference, serum albumin, haemoglobin).* Significant increases in all measures (all $p < 0.001$) post-training, indicating improved nutritional status.
	3.	*Calorie intake.* Significant increase post-training ($p < 0.001$).
	4.	*EdFED.* Scores decreased significantly indicating improved eating compliance ($p < 0.001$).
	5.	*Mini Mental State Examination (MMSE).* No post-training changes.
Christensson *et al*. (2003)	1.	*Staff Attitudes to Nutritional Nursing care (SANN).* Post-training measures showed no significant differences between total SANN scores for staff in experimental group and control group.
Faxen-Irving et al. (2002)	1.	*Nutritional status (weight: body mass index [BMI]; triceps skin fold; arm muscle circumference [AMC]; serum concentrations of albumin, transferrin, B12 and haemoglobin).* Positive effects on weight and triceps skin fold measures; variable or no changes in the other measures.
	2.	*Activities in Daily Living Index.* No positive effects found.
	3.	*MMSE.* No positive effects found.
	4.	*Clinical Dementia Rating (CDR).* No positive effects found.
Mamhidir et al. (2007)	1.	*Weight.* In the intervention ward, 13 PWD had increased weight post-training, five had lost weight. In the control ward, two PWD had increased weight, 12 had lost weight, one had maintained weight. Greater weight loss was seen in the control ward.
	2.	*Staff diaries pre- and post-training.* Manifest content analysis of staff diaries showed several changes post-training in the intervention ward, in both routines and the physical environment. No such changes were reported in the control ward.
Perivolaris et al. (2006)	1.	*Calorie intake.* After environmental intervention, average calorie intake increased from mean of 490 to 663 (statistically significant). After environmental and staff training, average calorie intake increased again to 677 (not statistically significant).

	3. *Self-feeding ability (Feeding Abilities Assessment).* No change for 8 of the 11 PWD. One resident improved from being unable to self-feed pre-intervention, to feeding independently at week 12. One resident deteriorated. 4. *Staff reports.* Differences reported in pace of meals (PWD taking the full hour rather than rushing or wandering away); increased socialisation between PWD. 5. *Resident agitation (Pittsburgh Agitation Scale).* No statistically significant changes. However, 72.75% of PWD did not have challenging behaviours at any point. *6.* *Resident satisfaction (scale 1-4).* Eight of the 11 PWD were able to rate their satisfaction with the lunch time meal across three time points (pre-training, weeks 6 and 12); no significant differences were found. 7. *Staff satisfaction questionnaire.* Five of the 7 staff involved completed the questionnaire; changes were not statistically significant. There was a trend towards increasing satisfaction in relation to time allocated to assist PWD, and ability of staff to adapt their approach compared to the baseline.
Roberts and Durnbaugh (2002)	1. *Mealtime observations.* No clear comparison between pre- and post-training observations. 2. *Theoretical knowledge test.* Post-training mean score of all staff trained was significantly increased compared with the pre-test score ($p < .05$). 3. *Food intake.* Paired t-tests calculated on mean totals of various food types (e.g., protein, vegetable) showed no difference in the pre- and post-training.
Suominen et al. (2007)	1. *Energy and nutrient intake (calculated from food diaries).* Significant increase of energy intake post-training ($p < 0.001$). Pre-training, none of PWD received the minimum recommended energy intake; post-training, 6 PWD (29% of total) did. Significant increase of PWD mean intake of protein, calcium ($p < 0.05$), and folic acid ($p < 0.07$). 2. *Mini Nutritional Assessment test (MNA).* Pre-training, no PWD had a good nutritional status; post-training 16% (3 of 21) of PWD had a good nutritional status. 3. *BMI and weight.* Calculated for 20 PWD, BMI was similar pre- and post-training. There was weight gain in 42% of PWD, and weight loss also in 42% of PWD.

	4. *Staff feedback questionnaires (Likert scale).* Food diaries (mean 4.3), and discussion with colleagues (mean 4.6), were rated as the most helpful ways to learn about nutritional care. Learning to assess PWD with the MNA test also rated highly (mean 3.9). Lectures and studying alone were rated the least useful methods in the learning process.
Van Ort and Phillips (1995)	1. *Weight.* No changes pre- and post-training. 2. *Functional feeding.* Feeding-related interpersonal contact between PWD and staff was more sustained post-training. Also, a better match between the functional abilities of PWD and the level of assistance offered by staff post-training.

Table 5. Synthesis matrix of training needs and interventions

Themes from training needs studies (Name of theme, description)	**Training interventions with relevant content**
Person-centred care Optimal care is achieved by considering the individual needs, preferences and problems of PWD. Communication and interaction between carer and PWD help to facilitate this.	Batchelor-Murphy et al. (2015) Christensson et al. (2003) Mamhidir et al. (2007) Perivolaris et al. (2006)
Dealing with uncertainty Staff are often uncertain of the right approach when managing mealtime difficulties – in particular, food refusal. This can cause emotional challenge.	Chang and Lin (2005)
Strategies, skills and knowledge Staff require strategies, skills and knowledge to manage mealtime difficulties. This includes feeding assistance skills, and nutritional knowledge.	Altus et al. (2002) Batchelor-Murphy et al. (2015) Chang and Lin (2005) Chen (2016) Christensson et al. (2003) Faxen-Irving et al. (2002) Roberts and Durnbaugh (2002) Suominen et al. (2007)
Creating the right environment Creating the right environment at mealtimes is an important aspect of care. The environment should be positive, social and attractive.	Batchelor-Murphy et al. (2015) Chang and Lin (2005) Charras and Frémontier (2010) Chen et al. (2016) Mamhidir et al. (2007) Perivolaris et al. (2006) Van Ort and Phillips (1995)

Appendix 1 - MEDLINE search strategy

1. Nurses/
2. Nurses' aides/
3. Nursing Staff/
4. nurs*.ti,ab.
5. Caregivers/
6. care*.ti,ab.
7. 1 or 2 or 3 or 4 or 5 or 6
8. exp Dementia/
9. Cognitition disorders/
10. dement*.ti,ab.
11. Alzheimer*.ti,ab.
12. 8 or 9 or 10 or 11
13. Inservice Training/
14. Staff Development/
15. Education/
16. Education, Professional/
17. Teaching/
18. Education, Nursing, Continuing/
19. exp Education, Nursing/
20. Competency-Based Education/
21. Learning/
22. Health Knowledge, Attitudes, Practice/
23. Clinical Competence/
24. train*.ti,ab.
25. skill*.ti,ab.
26. know*.ti,ab.
27. competen*.ti,ab.
28. confiden*.ti,ab.
29. educat*.ti,ab.
30. learn*.ti,ab.
31. 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32. Deglutition/
33. Deglutition Disorders/
34. exp Eating/
35. exp Meals/
36. Food/
37. eat*.ti,ab.
38. drink*.ti,ab.
39. meal*.ti,ab.
40. swallow*.ti,ab.
41. dysphagi*.ti,ab.
42. feed*.ti,ab.
43. food*.ti,ab.
44. 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43
45. 7 and 12 and 31 and 44
46. [Limit to: Peer reviewed and (Language English) and Humans]

Appendix 2 – Full-text articles excluded, with reasons

Articles	Reasons for exclusion
Altus, D. (2002). Using Family-Style Meals to Increase Participation and Communication in Persons with Dementia. *Journal of Gerontological Nursing, 28(9),* 47-53.	Focus is not training needs or a training intervention
Amella, E. J. (2004). Feeding and hydration issues for older adults with dementia. *Nursing Clinics of North America, 39(3),* 607-23.	Not primary research
Amella, E. J. & Batchelor-Aselage, M. B.. (2014). Facilitating ADLs by caregivers of persons with dementia: the C3P model. *Occupational Therapy in Health Care, 28(1),* 51-61.	Not primary research
Andersson, M. & Gottfries, C. G. (1991). Nursing home care: factors influencing the quality of life in a restricted life situation. *Aging, 3,* 229-39.	Focus is not mealtime difficulties
Archibald, C. (2006). Meeting the nutritional needs of patients with dementia in hospital. *Nursing Standard, 20,* 41-5.	Not primary research
Armstrong-Esther, C. A., Browne, K. D., Armstrong-Esther, D. C., & Sander L. (1996). The institutionalized elderly: dry to the bone! *International Journal of Nursing Studies, 33,* 619-28.	Majority of patients do not have dementia
Athlin, E. & Norberg, A. (1987). Interaction between the severely demented patient and his caregiver during feeding. A theoretical model. *Scandinavian Journal of Caring Sciences, 1,* 117-23.	Focus is not training needs or a training intervention
Athlin, E. & Norberg, A. (1987). Caregivers' attitudes to and interpretations of the behaviour of severely demented patients during feeding in a patient assignment care system. *Scandinavian Journal of Caring Sciences, 24,* 145-53.	Focus is not training needs or a training intervention
Aselage, M. B., Amella, E. J., & Watson, R., (2011). State of the science: alleviating mealtime difficulties in nursing home residents with dementia. *Nursing Outlook, 59,* 210-4.	Not peer reviewed
Ball, S. L., Panter, S. G., Redley, M., Proctor, C. A., Byrne, K., Clare, I. C., & Holland, A. J. (2012). The extent and nature of need for mealtime support among adults with intellectual disabilities. *Journal of Intellectual Disabilities Research, 56,* 382-401.	Focus is not training needs or a training intervention
Benner Carson, V., Johnson Vanderhorst, K., & Koenig, H. G. (2015). *Care giving for Alzheimer's Disease.* New York: Springer.	Not primary research
Bennett, M. K., Ward, E. C., & Scarinci, N. A. (2015). Mealtime management in Australian residential aged care: Comparison of documented, reported and observed care. *International Journal of Speech-Language Pathology, 17,* 451-9.	Majority of patients do not have dementia

Bennett, M. K., Ward, E. C., Scarinci, N. A., & Waite, M. (2015). Perspectives on mealtime management in residential aged care: insights from a cross-disciplinary investigation. *Journal of Nutrition in Gerontology and Geriatrics, 33(4),* 325-39.	Majority of patients do not have dementia
Bonnel, W. B. (1995). Managing mealtime in the independent group dining room: an educational program for nurse's aides. *Geriatric Nursing, 16(1),* 28-32.	Majority of patients do not have dementia
Boström, A.M., Van Soest, D., Kolewaski, B., Milke, D. L., & Estabrooks, C. A. (2011). Nutrition status among residents living in a veterans' long-term care facility in Western Canada: a pilot study. *Journal of the American Medical Directors Association, 12(3),* 217-25.	Focus is not training needs or a training intervention
Brooke, J. & Ojo., O. (2015). Oral and enteral nutrition in dementia: an overview. *British Journal of Nursing, 24(12),* 624-8.	Not a primary study
Chang, E., Daly, J., Johnson, A., Harrison, K., Easterbrook, S., Bidewell, J., Stewart, H., Noel, M., & Hancock, K. (2009). Challenges for professional care of advanced dementia. *International Journal of Nursing Practice, 15(1),* 41-7.	Focus is not mealtime difficulties
Chang, C. C., Wykle, M. L., & Madigan, E. A. (2006). The effect of a feeding skills training program for nursing assistants who feed dementia patients in Taiwanese nursing homes. *Geriatric Nursing, 27(4),* 229-37.	Study is reported in another article
Charras, K. & Fremontier, M. (2010). Sharing meals with institutionalized people with dementia: a natural experiment. *Journal of Gerontological Social Work, 53(5),* 436-48.	Focus is not training needs or a training intervention
Claggett, M. S. (1989). Nutritional factors relevant to Alzheimer's disease. *Journal of the American Dietetic Association, 89(3),* 392-6.	Not primary research
Cleary, S. (2007). Current approaches to managing feeding and swallowing disorders for residents with dementia. *Canadian Nursing Home, 18,* 11-16.	Not primary research
Cohen-Mansfield J., Marx M. S., Dakheel-Ali M., & Thein K. (2015). The use and utility of specific nonpharmacological interventions for behavioral symptoms in dementia: an exploratory study. *The American Journal of Geriatric Psychiatry, 23(2),* 160-70.	Focus is not training needs or a training intervention
Conrath, K. (2015). Long-Term Care. In B. L. Bonham (Eds.), *The Gerontology Nurse's Guide to the Community-Based Health Network.* New York: Springer.	Not primary research
Coyne, M. L. (1988). *The Effect of Directed Verbal Prompts and Positive Reinforcement on the Level of Eating Independence of Elderly Nursing Home Clients with Dementia.* (Unpublished doctoral dissertation). The Catholic University of America, Washington D.C.	Not peer reviewed
Coyne, M. L., & Hoskins, L. (1997). Improving eating behaviors in dementia using behavioral strategies. *Clinical Nursing Research, 6(3),* 275-90.	Focus is not training needs or a training intervention

Crack, J. & Crack, G. (2007). Promoting quality care for older people in meal management: whose responsibility is it? *Australian Journal of Advanced Nursing, 25(1),* 85-89.	Not a primary study
DiBartolo, M. C. (2006). Careful hand feeding: a reasonable alternative to PEG tube placement in individuals with dementia. *Journal of Gerontological Nursing, 32(5),* 25-33.	Not a primary study
Gilmore-Bykovskyi, A. L. (2015). Caregiver person-centeredness and behavioral symptoms during mealtime interactions: development and feasibility of a coding scheme. *Geriatric Nursing, 36,* S10-S15.	Focus of the paper is methods, not training needs/intervention
Hall, G. R. (1994). Chronic dementia. Challenges in feeding a patient. *Journal of Gerontological Nursing, 20(4),* 21-30.	Not a primary study
Hanson, L. C., Ersek, M., Lin, F. C., & Carey, T. S. (2013). Outcomes of Feeding Problems in Advanced Dementia in a Nursing Home Population. *Journal of the American Geriatrics Society, 61(10),* 1692–1697.	Focus is not training needs or a training intervention
Hanson, L. C., Carey, T. S., Caprio, A. J., Lee, T. J., Ersek, M., Garrett, J., … Mitchell, S. L. (2011). Improving Decision Making for Feeding Options in Advanced Dementia: A Randomized, Controlled Trial. *Journal of the American Geriatrics Society, 59(11),* 2009–2016.	Focus is not training needs or a training intervention
Henderson, M. (2012). *Making Meal Times Better for those with a Dementia.* (Unpublished doctoral dissertation). University College London.	Not peer reviewed
Henton, R. (2003). *An exploration of the "feeding partnership" between patients with late stage dementia and nursing staff.* (Unpublished doctoral dissertation). City University London.	Not peer reviewed
Heritage, M. (2001). A collaborative approach to the assessment and management of dysphagia. *International Journal of Language and Communication Disorders, 36, S1,* 369-374.	Majority of patients do not have dementia
Hotaling, D. L. (1990). Adapting the mealtime environment: setting the stage for eating. *Dysphagia, 5(2),* 77-83.	Not a primary study
Hobday, J. V., Savik, K., Smith, S., & Gaugler, J. E. (2010). Feasibility of Internet Training for Care Staff of Residents with Dementia: The CARES® Program. *Journal of Gerontological Nursing, 36(4),* 13–21.	Focus is not mealtime difficulties
Keller, H., & Slaughter, S. (2016). Training programmes and mealtime assistance may improve eating performance for elderly long-term care residents with dementia. *Evidence-Based Nursing, 19,* 32.	Not primary research
Jannson, L., & Norberg, A. (1992). Ethical Reasoning Among Registered Nurses Experienced in Dementia Care. *Scandinavian Journal of Caring Science, 6(4),* 219-227.	Focus is not training needs or a training intervention
Jansson, L., Norberg, A., Sandman, P.-O., & Åström, G. (1995). When the severely ill elderly patient refuses food: Ethical reasoning among nurses. *International Journal of Nursing Studies, 32(1),* 68-78.	Study is reported in another article
Kayser-Jones, J. (1996). Mealtime in nursing homes: the importance of individualized care. *Journal of Gerontological Nursing, 22(3),* 26-31.	Unclear whether majority of patients have dementia

Kayser-Jones J, Schell E. S., Porter C., Barbaccia J. C., & Shaw H. (1999). Factors contributing to dehydration in nursing homes: inadequate staffing and lack of professional supervision. *Journal of the American Geriatrics Society, 47(10),* 1187-94.	Focus is not mealtime difficulties
Keller, H. H., Smith, D., Kasdorf, C., Dupuis, S., Martin, L. S., Edward, G., … Genoe, R. (2008). Nutrition education needs and resources for dementia care in the community. *American Journal of Alzheimer's Disease and Other Dementias, 23(1),* 13–22.	Focus is not paid care staff
Kuehlmeyer K., Schuler A. F., Kolb C., Borasio G. D., & Jox R. J. (2015). Evaluating Nonverbal Behavior of Individuals with Dementia During Feeding: A Survey of the Nursing Staff in Residential Care Homes for Elderly Adults. *Journal of the American Geriatrics Society, 63(12),* 2544-2549.	Focus is not training needs or a training intervention
Kyle, G. (2011). Managing dysphagia in older people with dementia. *British Journal of Community Nursing, 16(1),* 6-10.	Not primary research
Layne, K. A. (1990). Feeding strategies for the dysphagic patient: a nursing perspective. *Dysphagia, 5(2),* 84-8.	Not primary research
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Magnus, V. (2001). Dysphagia training for nurses in an acute hospital setting - a pragmatic approach. *International Journal of Language and Communication Disorders, 36, S1,* 375-78.	Majority of patients do not have dementia
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Shaw & May (2001). Sharing knowledge with nursing home staff: an objective investigation. *International Journal of Language & Communication Disorders, 36(S1),* 200-205.	Majority of patients do not have dementia
Skog, M., Grafström. M., Negussie, B., & Winblad, B. (2000). The patient as 'teacher': learning in the care of elderly persons with dementia. *Nurse Education Today, 20(4),* 288-97.	Focus is not mealtime difficulties
Slaughter S., Morgan D., & Drummond N. (2011). Functional Transitions of Nursing Home Residents with Middle-Stage Dementia: Perspectives of Family Members and Nurses. *Journal of Gerontological Nursing, 37(5)*, 50-59.	Focus is not training needs or a training intervention
Steele, C. M., Greenwood, C., Ens, I., Robertson, C., & Seidman-Carlson, R. (1997). Mealtime difficulties in a home for the aged: not just dysphagia. *Dysphagia, 12(1),* 43-50.	Focus is not training needs or a training intervention
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Ullrich, S. & McCutcheon, H. (2008). Nursing practice and oral fluid intake of older people with dementia. *J Clin Nurs, 17(21),* 2910-19.	Focus is not mealtime difficulties
Van Ort, S. & Philips, L. (1992). Feeding nursing home residents with Alzheimer's disease. *Geriatric Nursing, 13(5),* 249-53.	Focus is not training needs or a training intervention
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Wilmot, S., Legg, L., & Barratt, J. (2002). Ethical issues in the feeding of patients suffering from dementia: a focus group study of hospital staff responses to conflicting principles. Nurs Ethics, 9(6), 599-611.	Focus is not training needs or a training intervention
Young A. M., Mudge, A. M., Banks, M. D., Ross, L. J., & Daniels, L. (2013). Encouraging, assisting and time to EAT: improved nutritional intake for older medical patients receiving Protected Mealtimes and/or additional nursing feeding assistance. *Clinical Nutrition,* 32(4), 543-9.	Majority of patients do not have dementia

Appendix 3 – Data Extraction Form

1. General information

1. **Date form completed** ***(dd/mm/yyyy)***	
2. **Name of person extracting data**	
3. **Citation information** ***(APA format)***	
4. **Research question / objectives / aims**	
5. **Design** ***(e.g. RCT, cohort study, qualitative)***	
6. **Notes:**	

2. Setting and participants

	Description *Include comparative information for each group (i.e. intervention and controls) if available*	**Location in text** *(pg or fig/table)*
7. **Setting** ***(e.g. type, location, patient population)***		
8. **Characteristics of nurses, care staff** ***(e.g. number, profession/ experience)***		
9. **Method of recruitment of nurses / care staff**		
10. **Withdrawals / exclusions**		
11. **Notes:**		

3. Training intervention (if applicable)

12. **Was there a training intervention?**	(If "Yes", complete this section; if "No", go to section 4)	
	Descriptions as stated in report/paper	**Location in text** *(pg or fig/table)*
13. **Number of participants in intervention group** *(subtract withdrawals)*		
14. **Method of allocation to intervention group and control group**		
15. **Delivery of training** ***(e.g. one-to-one, on-line, lectures, use of manuals or other materials, duration/timing of sessions)***		
16. **Content of training** *(e.g. themes, topics, chapters etc)*		
17. **Providers of training** ***(e.g. number of trainers, profession/background, experience)***		
18. **Development of training** (*e.g. theoretical basis, evidence, if any)*		
19. **Control(s) (if any)** *(describe any control groups or conditions)*		
20. **Notes:**		

4. Quantitative data (if applicable)

21. **Does the paper report quantitative data?**	(If "Yes", complete this section; if "No", go to section 5)	
	Description as stated in report/paper	**Location in text** *(pg & ¶/fig/table)*
Outcome measure # 1		
22. **Definition/description of outcome measure** *(include unit/scales if relevant, and any comments on validity/reliability)*		
23. **Results for intervention group and any control groups** *(state all different time-points, if applicable)*		
Outcome measure # 2 *(state "N/A" if not applicable)*		
24. **Definition/description of outcome measure** *(include unit/scales if relevant, and any comments on validity/reliability)*		
25. **Results for intervention group and any control groups** *(state all different time-points, if applicable)*		
Outcome measure # 3 *(state "N/A" if not applicable)*		
26. **Definition/description of outcome measure** *(include unit/scales if relevant, and any comments on validity/reliability)*		
27. **Results for intervention group and any control groups** *(state all different time-points, if applicable)*		
Please copy-and-paste extra rows if any other relevant outcome measures		
28. **Notes:**		

5. Qualitative data (if applicable)

29. **Does the paper report qualitative data?**	(If "Yes", complete this section; if "No", go to section 6)	
	Description as stated in report/paper	**Location in text** *(pg & ¶/fig/table*
30. **Data collection method(s)** *(e.g. questionnaire, interviews, focus groups, etc)*		
31. **Data analysis method(s)** (*e.g. thematic analysis, grounded theory, coding, triangulation, etc)*		
32. **Themes** (*i.e. what are the main themes/findings that the authors draw from qualitative data analysis? Use copy-and-paste)*		

6. Other information

	Description as stated in report/paper	**Location in text** *(pg & ¶/fig/table)*
33. **Key conclusions / recommendations of study authors**		
34. **Implications for practice** *(as stated by the author(s)*		
35. **Notes:**		